

NOTES ON CUP-FUNGI—2

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The coprophilous *Lasiobolus monascus* Kimbr. is described from specimens of Papua New Guinea and France. The pyrophilous *Lachnea brunneola* Rehm is described from recent Bavarian material and the type specimen. For this species the new name *Anthracobia rehmii* Brumm. is proposed.

Lasiobolus monascus Kimbr.—Figs. 1, 2

Lasiobolus monascus Kimbrough in Mycologia 66: 909. 1974.

Apothecia solitary or in small groups, superficial, sessile on a narrow base, 0.2–0.3 mm diam., 0.4–0.6 mm high. Receptacle at first pyriform with an inconspicuous opening at the top, then more elongated, becoming flask-shaped to subcylindrical, almost pure white; surface covered with isolated colourless hairs; margin not differentiated. Hymenium with a single ascus only. Hypothecium not clearly differentiated, consisting of only a few relatively thick-walled subglobular cells 9–14(–18) μ m wide. Flesh not differentiated. Excipulum near the base 35–90 μ m thick, at the margin 6–12 μ m wide, hyaline, consisting of rounded and subangular cells 5–32 \times 4–28 μ m (textura globularis or angularis). Hairs rather superficial, arising from the two outermost layers of excipular cells, single, up to 2-septate, straight, thick-walled (1–4.5 μ m), 80–190 μ m long, near the base often swollen 7–12(–22) μ m wide, with acuminate apices, often slightly roughened in the terminal half. Asci ellipsoid to subpyriform without a stalk, forced to open by a more or less round operculum at the top, rather thick-walled (c. 2 μ m near the base, reaching 8 μ m at the top) (210–)270–370 \times (115–)170–220 μ m, with more than 1000 spores, not blue in Melzer's reagent, with a conspicuous rimmed plug near the base (4–5.5 μ m, with rim up to 16–18 μ m diam.). Ascospores arranged in a large subovoid cluster, ellipsoid (length/width ratio (1.6–)1.7–1.9(–2.0), average 1.8), hyaline, very variable in size, (6.5–)7.5–13.0(–16.0) \times (3.7–)4.5–7.0(–8.8) μ m, without oil globules, thin-walled, smooth. Paraphyses rather scarce, septate, slender filiform, sparsely branched, hyaline, 1.6–2.0 μ m thick, not enlarged at the tip, not embedded in mucus. Mycelium of hyaline hyphae 1.8–5.0 μ m wide, straight or curved, branching.

Habitat.—On dung of porcupine and rabbit.

Specimens examined.—PAPUA NEW GUINEA, Mt. Suckling, on porcupine dung, 6.IX.1972, *van Brummelen* 3563 (L). —FRANCE, La Sarthe, Fontaines Chauds, near Epau, S. of Le Mans, on rabbit dung, 2.III.1984, *van Brummelen* 7167 (L).

This species with very small and inconspicuous fruit-bodies has only rarely been collected. So far it is only known from Gainesville (U.S.A.), Mount Suckling (Papua New Guinea), and Le Mans (France). Despite its rarity, the structure of this species is exceptionally well known. Its anatomy, development, and cytology were studied by Kim-

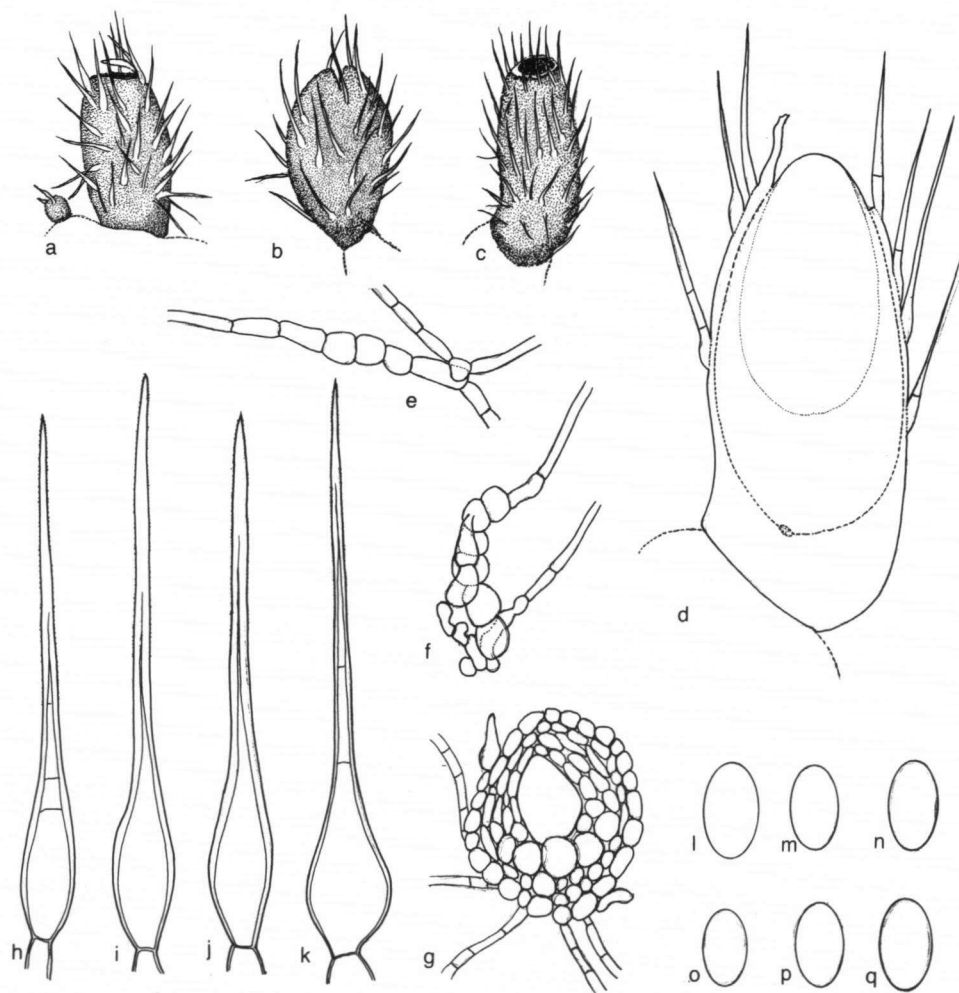


Fig. 1. *Lasiobolus monascus*. — a-c. Habit of fruit-bodies $\times 63$. — d. Diagrammatic section of fruit-body $\times 160$. — e, f. Antheridia and ascogonia $\times 400$. — g. Young fruit-body in section. — h-k. Hairs $\times 400$. — l-q. Ascospores $\times 1600$. (All from van Brummelen 7167.)

brough (1966), its ultrastructure by Merkus (1976), van Brummelen (1978), and Kimbrough & Benny (1978).

Thus far it is the only species of the genus *Lasiobolus* Sacc. known to have multi-spored, uniascal fruit-bodies (Bezerra & Kimbrough, 1975).

While the hairs in other species of *Lasiobolus* are non-septate, part of the hairs in *L. monascus* shows one or two septa. Although hairs without septa are more frequent in the upper part of the fruit-body, these are very similar to those with one or two septa and should not be considered a separate type, as proposed by Kimbrough (1966).

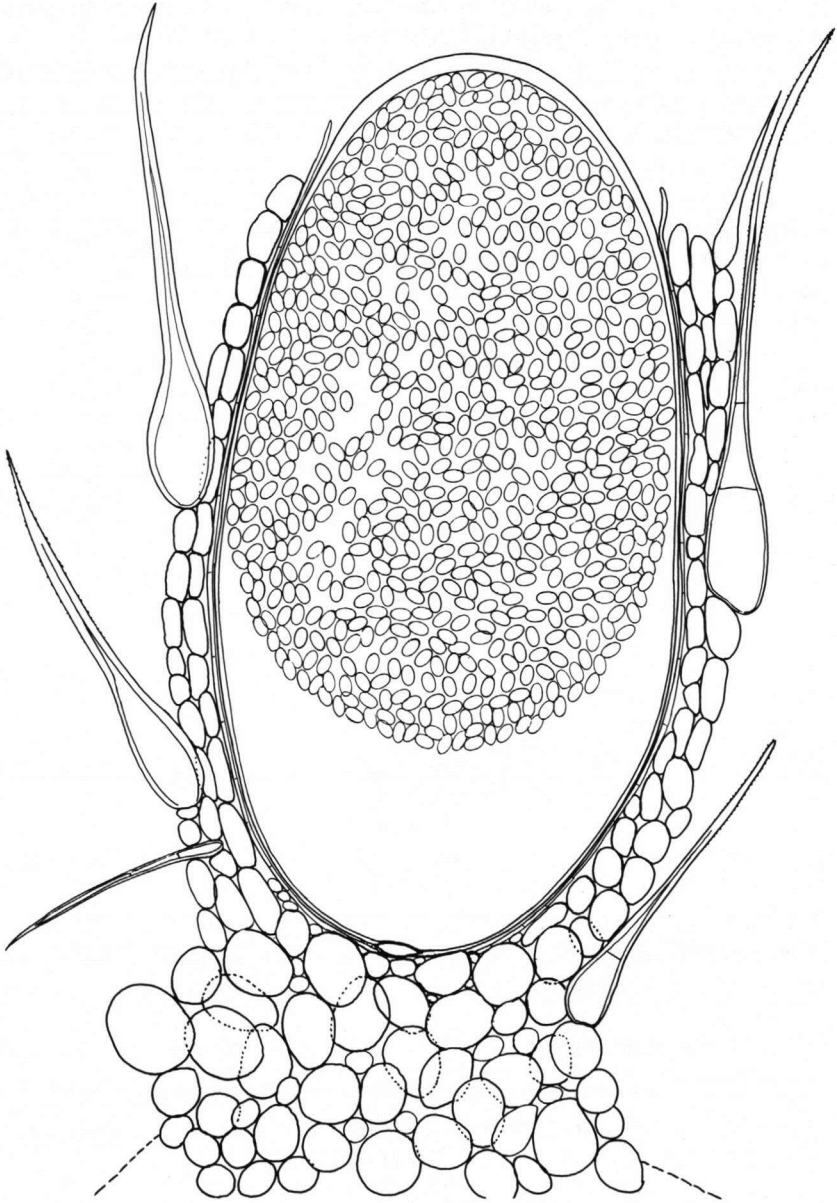


Fig. 2. *Lasiobolus monascus*, median section of fruit-body $\times 400$ (from van Brummelen 7167.)

Near the base of the fruit-body small, some unswollen hairs without orientation may occur. These probably represent a transition between the seta-like hairs and the anchoring hyphae.

The excipular hairs and the asci in *Lasiobolus monascus* agree well in shape and structure with those in other species of *Lasiobolus*.

Other genera of the Thelebolaceae with pilose fruit-bodies are *Trichobolus* (Sacc.) Kimbr. & Cain apud Kimbr. & Korf, *Mycoarctium* Jain & Cain, and *Lasiothelebolus* Kimbr. & Luck-Allen.

In *Trichobolus* the hairs are straight, stiff, pointed, septate, thick-walled, and not swollen near the base; the asci are thick-walled, multi-spored, and opening irregularly without operculum.

In *Mycoarctium* the hairs are straight, rather flexuous, pointed, septate, thick-walled, with coiled or hooked apex; the asci are thick-walled, 8-spored, and opening without operculum.

In *Lasiothelebolus*, a genus which according to its name and the combination of characters might also accommodate the present species, marginal hairs are of a unique structure. These hairs are blunt, septate, hyaline above, yellow below, and enlarged to 7–8 μm diameter, measuring 15–20 μm long. In *Lasiothelebolus oblongisporus* Kimbr. & Luck-Allen, the only species of the genus known till now, the hairs 'appear to deliquesce at the apices' and 'are different from those described by Eckblad and from any that the authors have seen described' (Kimbrough & Luck-Allen, 1974). However, the detailed photomicrograph of these hairs (l.c.: fig. 3) clearly reveals their true nature. This figure shows ampulliform phialids with a long cylindrical collarette and an ellipsoid venter at the base. Also cylindrical enteroblastic-phialidic conidia, responsible for the 'septation', can be observed. Phialids and conidia of this type are e.g. characteristic of several species of the genus *Chalara* (Corda) Rabenh. (cf. Nag Raj & Kendrick, 1975).

Since *Lasiothelebolus* seems to be based on a mixture of an eight-spored species of *Thelebolus* Tode and a phialidic anamorph of another fungus, it is not necessary to consider it further for eventual accommodation of *Lasiobolus monascus*.

The wide range of variation of the size of the ascospores in *L. monascus* is mainly a consequence of the variable number of spores formed in a single ascus. This number can vary from about 1000 to over 4000. Besides, the number of postmeiotic mitoses within the single ascus can be different in adjoining regions of the same spore-cluster. This results in different spore-sizes in the same ascus, as could be established in the material of Le Mans.

Anthracobia rehmi Brumm., *nom. nov.* — Figs. 3–5

Lachnea brunneola Rehm, Rabenh. Kryptog.-Fl. (Pilze) 3: 1048. 1895 (replaced synonym); not *Lachnea brunneola* (Desm.) Gill, Champ. France, Discomycètes 67. 1880. — Holotype: G. Winter, Gr.-Winterberg, Saxonia, Germany, end of VIII. 1891 (S).

Apothecia gregarious or closely crowded, superficial, sessile on a broad base, 2–5 mm diam., about 2 mm high. Receptacle at first globular and apparently closed, then

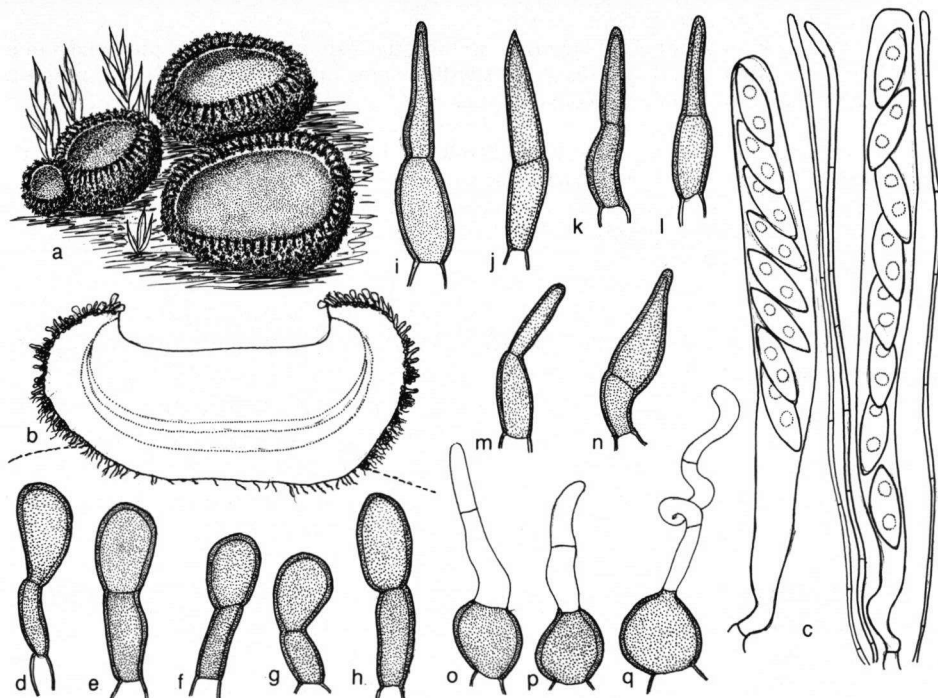


Fig. 3. *Anthracobia rehmi*. — a. Habit of fruit-bodies $\times 10$. — b. Diagrammatic section of young fruit-body $\times 40$. — c. Asci and paraphyses $\times 400$. — d-h. Marginal hairs $\times 400$. — i-n. Lateral hairs $\times 400$. — o-q. Rhizoidal hairs $\times 400$. (a-c. From Hanff, IX-X.1983. — d-q. From holotype.)

cup-shaped and expanding, becoming saucer-shaped, pale brown; consistency fleshy; surface covered with tufts and rows of dark brown hairs; margin slightly enrolled at first, densely clothed with vertical rows of brown hairs. Disc concave, even, pale yellowish brown. Hymenium about $250\ \mu\text{m}$ thick. Hypothecium not very compact, $15\text{--}25\ \mu\text{m}$ thick, of thin-walled hyphae $2\text{--}5\ \mu\text{m}$ wide and isodiametric cells up to $9\ \mu\text{m}$ across. Flesh $30\text{--}50\ \mu\text{m}$ thick of intermingled thin-walled hyphae $3.5\text{--}7\ \mu\text{m}$ wide (textura intricata). Excipulum clearly differentiated, near the base $90\text{--}200\ \mu\text{m}$ thick, at the margin up to $50\ \mu\text{m}$ wide, brownish by intercellular pigment, consisting of large polyhedral cells $15\text{--}46\ \mu\text{m}$ diam. (textura angularis, towards the surface textura globulosa). Hairs of three different types. Marginal excipular elements ending in terminally inflated, short, 1–3-celled, dark-walled hairs $30\text{--}55 \times 11\text{--}20\ \mu\text{m}$. Lateral 2–4-celled, dark-walled hairs $35\text{--}75 \times 10\text{--}15\ \mu\text{m}$, usually ending in a narrow blunt tip, arranged in rows or tufts together with thick-walled brown cells $15\text{--}26 \times 15\text{--}18\ \mu\text{m}$. Many long, twisting, septate, hyaline, rhizoidal hairs $7\text{--}19\ \mu\text{m}$ wide, at the base of the fruit-body. Asci cylindrical-clavate, narrower towards the base, rounded above, $180\text{--}240 \times 15\text{--}19\ \mu\text{m}$, 8-spored; the wall not staining blue with iodine. Ascospores obliquely monostichous, fusiform with pointed ends (length/width ratio 2.3–3.2, average 3.0), hyaline, $(19.0\text{--})25.0\text{--}29.0$ ($\text{--}34.5$) \times $(6.5\text{--})9.0\text{--}11.0$ ($\text{--}12.0$) μm , with 1 or usually 2 oil globules, smooth. Paraphyses rather frequent, septate, filiform, sparsely branched, pale brownish, c. $2\ \mu\text{m}$ thick, slightly enlarged up to $3.5\ \mu\text{m}$ at the tip, not embedded in mucus.

Habitat.—On burnt ground.

Etymology.—After Dr. Heinrich Rehm, the famous Bavarian physician and mycologist who first described this species with a name unacceptable under the present International Code of Botanical Nomenclature.

Specimens examined.—GERMAN FEDERAL REPUBLIC: Bavaria, Kreis Coburg, Rottenbach, on about six till twelve months old burnt ground among mosses and on hymenium and rhizoids of fruit-bodies of *Rhizina undulata* Fr.: Fr., 17.IX-14.X.1983, B. Hanff s.n. (L). — GERMAN DEMOCRATIC REPUBLIC: Saxonia, Gr.-Winterberg, on burnt ground, end of VIII.1891, G. Winter s.n. (holotype, Herb. Rehm, S).

This species, which was kindly sent to me by Mr. B. Hanff, is characterized by its short, blunt, brown hairs arranged in tufts or rows, its large smooth, fusiform, guttulate ascospores, and its habitat.

It is a typical representative of the genus *Anthracobia* Boud. and was described by Rehm (1895) as *Lachnea brunneola* Rehm. Apparently it is very rare, as it has not been recorded since.

Moser (1963) placed it with doubt in the synonymy of *Anthracobia maurilabra* (Cooke) Boud., but this species has a different colour and smaller, ellipsoid ascospores.

Lachnea brunneola Rehm is a later homonym of *Lachnea brunneola* (Desm.) Gill. —a synonym of *Dasyscyphus fuscescens* (Pers.: Fr.) Rehm (fide Dennis, 1949: 37). According to the 'Sydney Code', Arts. 64.1 and 72.1, *L. brunneola* Rehm is illegitimate and the taxon is in need of a new name. Apparently, no synonym is available. Therefore the new name *Anthracobia rehmii* Brumm. is chosen to replace *L. brunneola* Rehm.

I am greatly indebted to the authorities of the herbarium at Stockholm (S) for the loan of material and to Mr. B. Hanff for sending a fine collection of *Anthracobia rehmii*.

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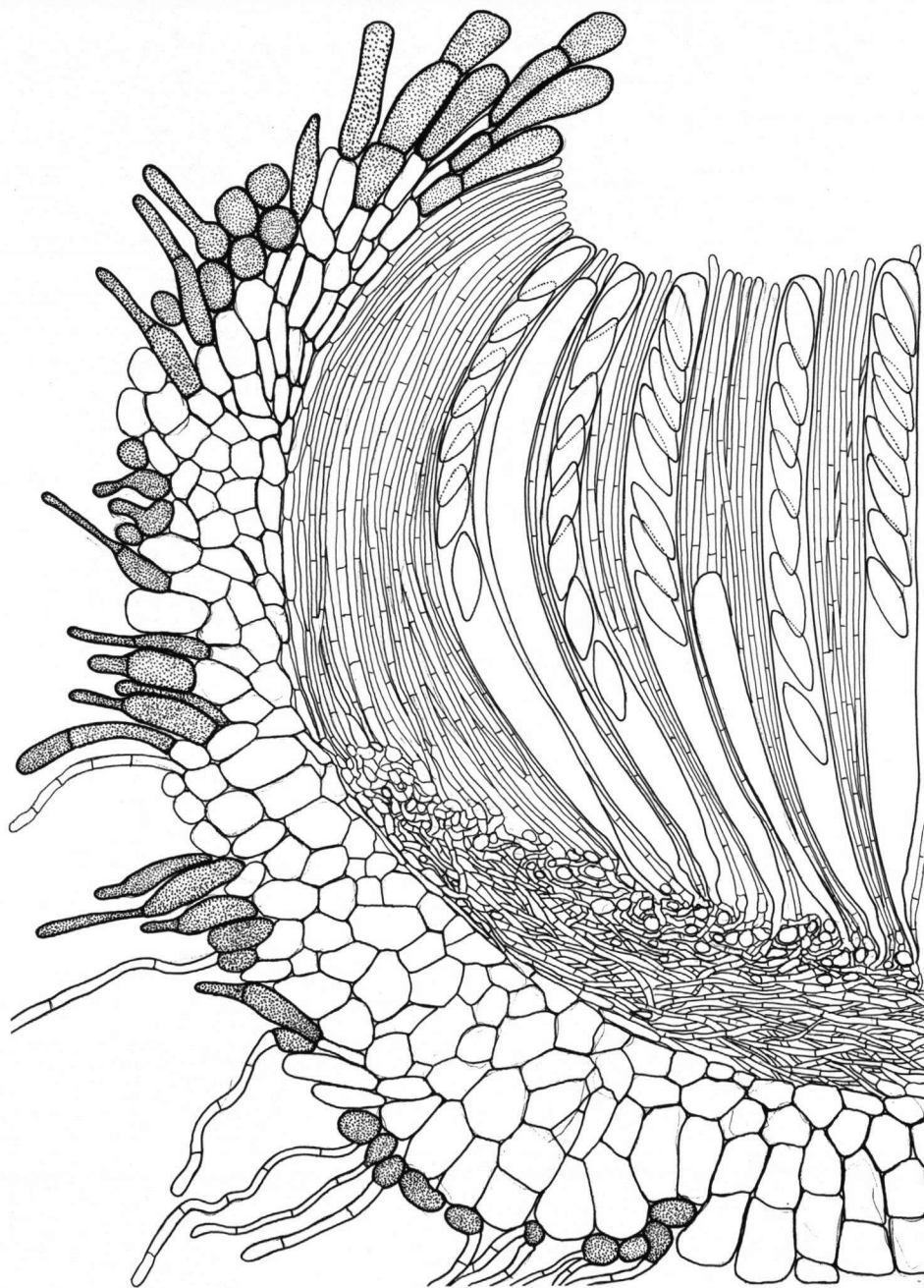


Fig. 4. *Anthracobia rehml*, median section of margin of fruit-body $\times 400$ (from coll. Hanff).

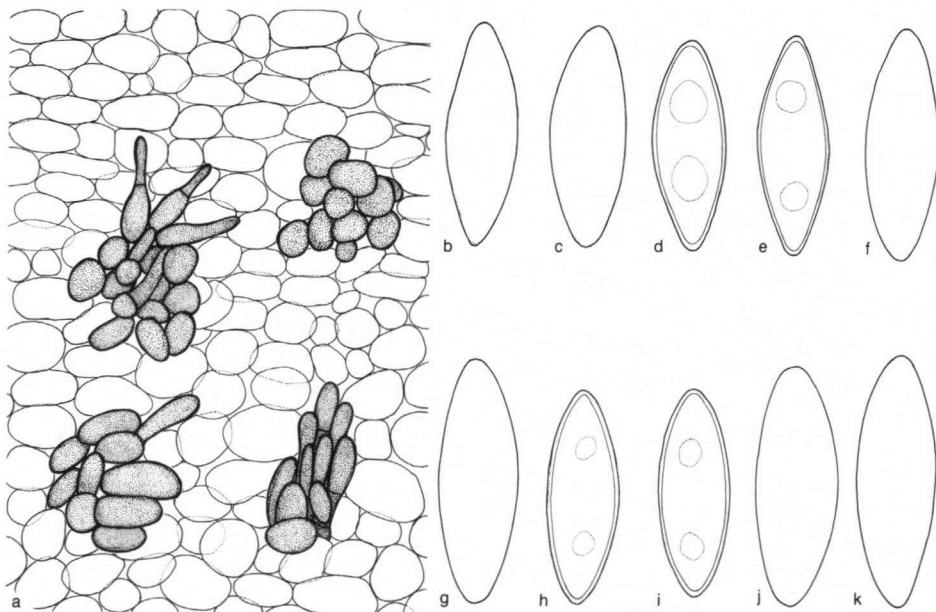


Fig. 5. *Anthracobia rehmi*. — a. Texture of excipulum seen from outside $\times 250$. — b-k. Ascospores $\times 1000$. (a-e. From Hanff, IX-X.1983. — f-k. From holotype.)

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